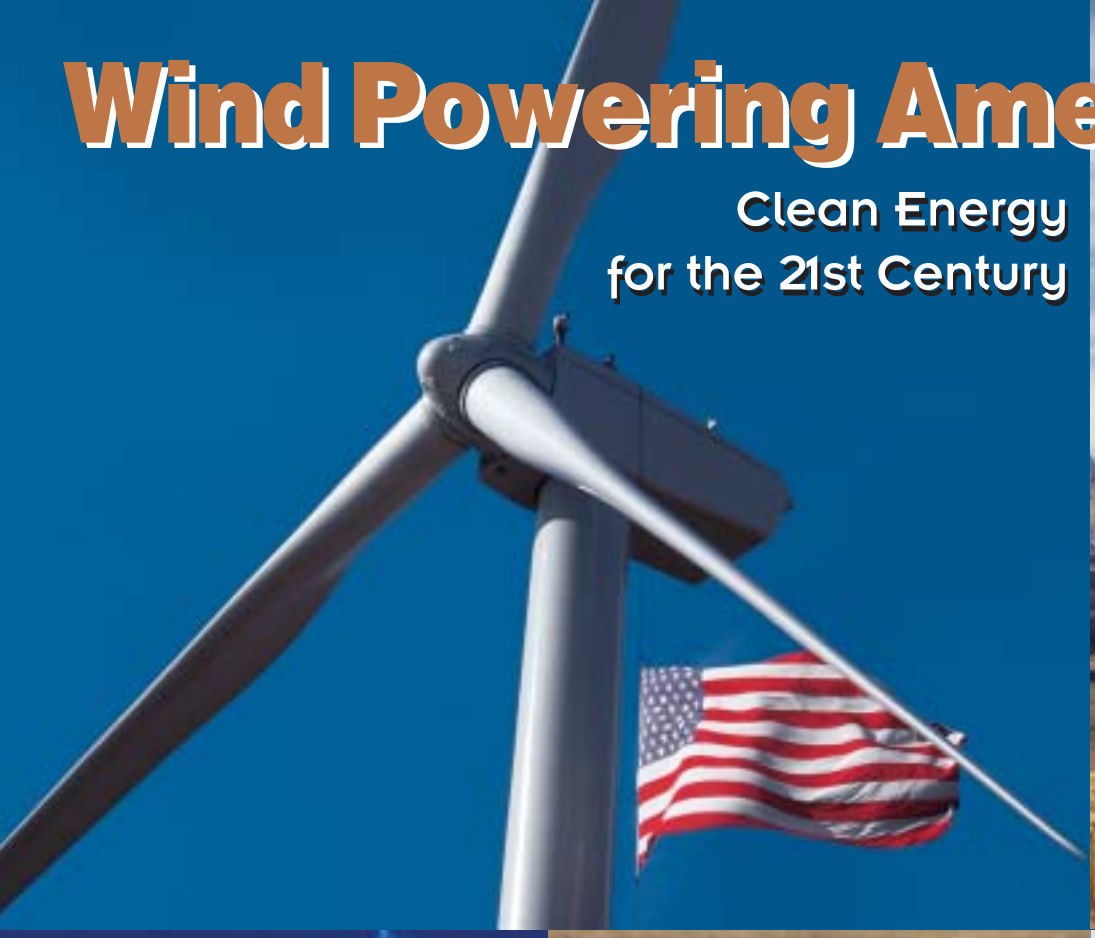
Wind Powering America

Clean Energy for the 21st Century



What is wind energy?

Why should I choose wind?

Can wind power my home?

Is there enough wind where I live to produce electricity?

Can I sell electricity to the utility?

Wind is homegrown energy that we can harvest right along side our corn or soybeans or other crops. We can use the energy in our local communities or we can export it to other markets. We need to look carefully at wind energy as a source of economic growth for our region.

David Benson, Farmer & County Commissioner,
Nobles County Minnesota

It seems only natural for rural utilities to do everything they can to advance both farm-based renewable energy development and rural economic development in a cost-effective way. In my opinion, wind energy is the next great chapter in the rural electrification story.

Aaron C. Jones, Washington Rural Electric Cooperative Association
Olympia, Washington

Wind energy adds diversity to our generation fleet and provides a hedge against fossil fuel price increases. In addition, the development of renewable energy resources is widely supported by the public and our customers.

Rick Walker, Director, Renewable Energy Business Development
AEP Energy Services, Inc.
Dallas, Texas

Wind projects add clean, renewable energy to our electricity supply while supporting the Northwest's rural economy. That's a pretty good combination.

Rachel Shimshak, Director of Renewable Northwest Project, and her son Max
Portland, Oregon

Penn State is proud to be part of bringing new wind generation to the east. Wind energy is great for Pennsylvania's environment and economy. It creates jobs, boosts income for farmers, returns former strip mine land to productive use, and contributes to our nation's energy independence. We hope Penn State's commitment will inspire others to buy wind energy.

Ford Stryker, Manager of Environmental Strategy, Pennsylvania State University
University Park, Pennsylvania

What is wind energy?

Wind is created by the unequal heating of the Earth's surface by the sun. Wind turbines convert the kinetic energy in the wind into mechanical power that turns a generator that produces electricity to power homes, schools, businesses, and communities.

Warren Gretz, NREL/PIX06330

Why should I choose wind?

- Wind energy is a free, inexhaustible renewable resource.
- Wind energy is a source of clean, non-polluting electricity.
- A single utility-scale (750kW) wind turbine can prevent the emission of 5000 tons of carbon dioxide (CO_2) into the atmosphere each year. It would take 500 acres of forest to absorb that much CO_2.
- Wind power plants can help increase our nation's energy security. They are modular and can be constructed more quickly than conventional energy plants to meet emergency energy needs and the energy they produce displaces imported fuels.
- Wind energy provides more jobs per dollar invested than any other energy technology.
- Wind energy can provide additional income for ranchers and farmers.
- Wind power plants increase property tax revenues for local communities.

Can I power my home or business with wind energy?

There are two ways you can power your home with wind. You can purchase wind energy in the form of green power from your local utility or you can provide a part of your electric needs with a small grid-connected wind electric system. A wind turbine rated in the range of 3 to 10 kilowatts could lower your utility bill by 30% to 70%.

Can I sell the extra electricity my system generates to the utility?

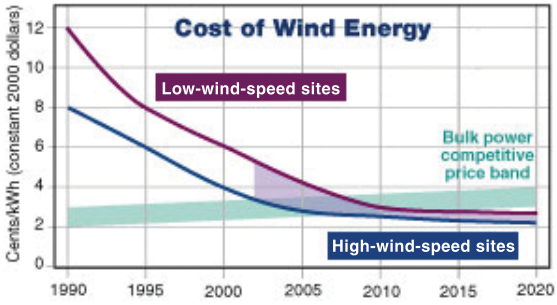
Federal regulations require utilities to connect with and purchase power from small wind energy systems. The terms for compensation will depend on whether or not your state has a net-metering program.

What is net metering?

Utilities with net-metering programs allow their customers to use the electricity their systems generate to offset their consumption over the entire billing period, not just instantaneously. This offset would enable customers with generating facilities to receive retail prices for the excess electricity they generate.

What is green power?

Green power is power produced by renewable or environmentally friendly sources such as wind and solar. Customers can purchase green power (energy in kilowatt-hours) from their utilities by paying just a little more each month. Wind energy costs from three cents to ten cents per kilowatt-hour.



The cost of wind energy has plummeted since 1980. Today, wind power is one of the cheapest sources of new electricity.

In evaluating the potential of wind energy generation, Native Americans realize that wind power is not only consistent with our cultural values and spiritual beliefs, but can also be a means of achieving native sustainable homeland economies.

Ronald Neiss, Rosebud Utility Commission President
Rosebud Reservation, South Dakota

Keith Roman/PIX09055

From our winter pasture near the Wyoming border, we used to be able to see all the way to Denver. Now all we see is air pollution. We believe it's time to begin using pollution-free energy in the West. That's why our winter range now boasts a wind farm.

Keith and Myrna Roman
Landowners/Ranchers in Weld County, Colorado

Before the advent of REA, farmers and ranchers in this part of the country depended on windmills to provide electricity. I like to think we're returning to our roots and the idea of self-sufficiency by installing small wind electric systems.

Gordon G. Brittan, Jr., rancher and Regents Professor of Philosophy
Montana State University, Bozeman, Montana

In my 44 years in the municipal utility business, no utility project has ever generated more customer support and interest than our wind turbine project.

Nick Scholer, former manager of Algona Municipal Utilities
Algona, Iowa

Our customers wanted this wind program and it was our job to deliver it. It has turned out to be a huge source of community pride. The turbines are a visible landmark (see cover photos) showing the Moorhead Community's commitment to a better world for our children.

Christopher Reed, Moorhead Public Service
Moorhead, Minnesota

Lloyd Herziger, Enron Wind Corp./PIX09641

Helping States Harvest A New Crop

Farmers and rural landowners nationwide are discovering a new cash crop that can be harvested year-round—wind energy. By harvesting the wind, farmers and rural landowners can supplement their incomes. In Iowa, where wind has been developed in a number of counties, typical family farms have 2 to 6 turbines on them. Landowners receive approximately 2% of the gross revenue from annual power sales, or about $2,000 per 750-kW turbine. At a time when farm economies are sorely strained, wind power appears to be an ideal supplement.

The U.S. Department of Energy's (DOE's) Wind Energy Program is helping to bring the message of economic opportunity through wind resource development to American farmers, Native Americans, and other rural landowners in states throughout the country. Since 1999, the Program has actively supported 10 state wind workshops to discuss wind technology, resources, development and benefits to local communities. With interest in wind development growing nationwide, DOE's Wind Program will continue to support local efforts to examine wind development and provide technical assistance to communities that decide to move forward.

Wind Powering America

The U. S. Department of Energy's Wind Powering America efforts strive to help the United States achieve targeted regional economic development, protect the local environment, reduce air pollution, lessen the risks of global climate change, and increase energy security.

Warren Gretz, NREL/PIX09630

The goals of Wind Powering America are:

- Provide at least 5% of the nation's electricity with wind by 2020
- Double the number of states that have more than 20 megawatts of wind capacity to 16 by 2005, and triple the number to 24 by 2010
- Increase wind's contribution to federal electricity use to 5% by 2010.

The benefits of Wind Powering America are:

- Adding $60 billion in capital investment in rural America over 20 years
- Reaching $8 billion in annual investment by 2020
- Providing $1.2 billion in new income for American farmers, Native Americans, and rural landowners over 20 years
- Creating 80,000 permanent jobs by 2020
- Displacing 35 million tons of atmospheric carbon by 2020.

Resources

U.S. Department of Energy
Wind Energy Program
Forrestal Building
1000 Independence Ave., S.W.
Washington, D.C. 20585
(202) 586-5348
www.eren.doe.gov/wind
www.windpoweringamerica.gov

National Renewable Energy Laboratory
National Wind Technology Center
1617 Cole Boulevard
Golden, Colorado 80401
(303) 384-6979
www.nrel.gov/wind

American Wind Energy Association
122 C Street, N.W., Suite 380
Washington, D.C. 20001
phone (202) 383-2500
fax (202) 383-2505
www.awea.org

The Department of Energy researches, develops, and deploys clean, efficient, and renewable energy technologies to help meet America's energy needs while protecting the environment and strengthening the economy. Energy technologies supported and promoted by the Department will play a key role in providing Clean Energy for the 21st Century.

Produced for the U.S. Department of Energy (DOE), by the National Renewable Energy Laboratory, a DOE national laboratory

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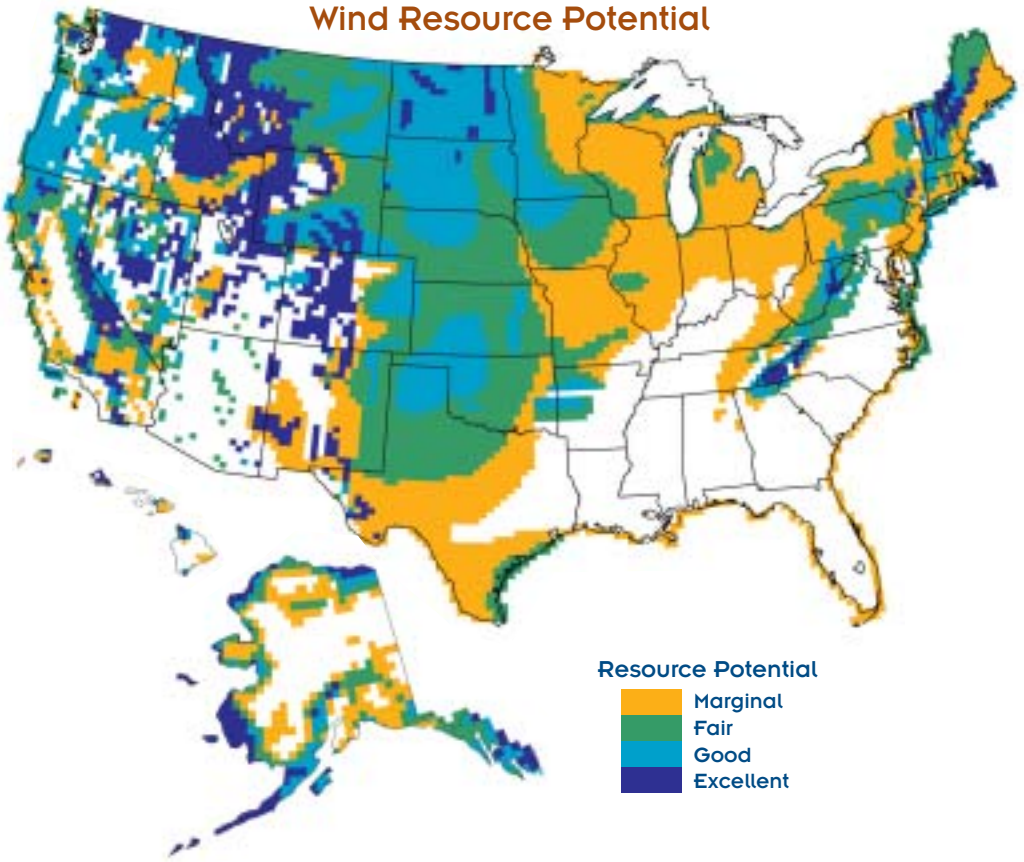
Wind Resource Potential



Is there enough wind where I live to produce electricity?

All 50 states have enough wind to power wind turbines. Thirty-seven states have wind resources that would support utility-scale wind power plants. To find out about the wind resources in your area, visit www.windpoweringamerica.gov or the wind resource database at www.nrel.gov/wind.

Wind Energy Developed by January 2002